

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Geophysical Survey Systems, Inc., Request for)	ET Docket No. 19-155
Waiver of Part 15 of the Commission's Rules to)	
Market an Ultra-Wideband Evaluation Kit)	

REPLY COMMENTS OF WAVESENSE, INC.

WaveSense, Inc. (“WaveSense”), through its attorneys, respectfully submits these reply comments in response to the public notice issued by the Office of Engineering and Technology (“OET”) in the above-captioned proceeding, seeking comment on the Geophysical Survey Systems, Inc. (“GSSI”) request for waiver (“GSSI Waiver Request”).¹ GSSI asks the Federal Communications Commission (“Commission”) to waive its Part 15 ultra-wideband (“UWB”) rules to allow GSSI to market up to 2000 evaluation kits for a ground penetrating radar (“GPR”) device.”² WaveSense believes that granting GSSI a waiver would further the public’s interest by helping realize the benefits of autonomous vehicles without creating interference to existing services, and thus urges OET to grant the GSSI Waiver Request without delay.

¹ Request for Waiver of Geophysical Survey Systems, Inc., ET Docket No. 19-155 (filed Apr. 11, 2019).

² *Office of Engineering and Technology Seeks Comment on Geophysical Survey Systems, Inc. Request for Waiver of Certain Part 15 Ultra-Wideband (UWB) Rules*, Public Notice, ET Docket No. 19-155, DA 19-491 (OET rel. May 30, 2019) (“*Public Notice*”). The rule sections that GSSI seeks to have waived involve the use of a stepped frequency configuration (47 CFR § 15.503(d)); the conducting of measurements with frequency sweep enabled (47 CFR § 15.31(c)); and the use of the GPR for entities other than law enforcement, firefighting, emergency rescue, scientific research, commercial mining, and construction (47 CFR § 15.509(b)). *See* GSSI Waiver Request at 5-6.

I. GRANT OF THE GSSI WAIVER REQUEST IS IN THE PUBLIC INTEREST AND WOULD NOT UNDERMINE THE PURPOSE OF THE COMMISSION’S RULES.

OET, acting on delegated authority, may grant requests for a waiver under Section 1.3 of the Commission’s rules if the petitioner demonstrates good cause for such action.³ Good cause may be found “where particular facts would make strict compliance inconsistent with the public interest.”⁴ “To make this public interest determination, the waiver cannot undermine the purpose of the rule, and there must be a stronger public interest benefit in granting the waiver than in applying the rule.”⁵ Grant of the GSSI Waiver Request, which would further the development and adoption of safety technologies that keep vehicles in their respective lanes, would promote the public interest without undermining the purpose of the Commission’s rules.

The safe and reliable operation of driver-assistance technologies—and eventually autonomous vehicles—promises to improve public health and safety. According to the National Highway Traffic Safety Administration (“NHTSA”), there are over 37,000 traffic deaths and over 2.4 million traffic injuries per year in the United States.⁶ It is estimated that “94 percent of serious crashes are due to human error.”⁷ Driver-assistance technologies and autonomous vehicles present an opportunity to minimize this human error and, by extension, save lives and reduce injuries. Autonomous driving technologies, as GSSI correctly points out in its filing, also promise to improve independence for older citizens and people with disabilities, lessen traffic congestion, reduce pollution, and improve travel and roadway efficiency, among many other

³ 47 C.F.R. § 1.3; *compare id.* §§ 0.31 and 0.241.

⁴ *ICO Global Communications (Holdings) Limited v. FCC*, 428 F.3d 264, 269 (D.C. Cir. 2005) (citing *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990)).

⁵ *Kyma Medical Technologies Ltd. Request for Waiver of Part 15 of the Commission’s Rules Applicable to Ultra-Wideband Devices*, Order, 31 FCC Rcd 9705, ¶ 5 (2016) (citing *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969)).

⁶ *See* NHTSA, “Quick Facts 2016,” <https://bit.ly/2C0zptv> (last visited July 5, 2019).

⁷ NHTSA, “Automated Vehicles for Safety,” <https://bit.ly/2w4Mzrr> (last visited July 5, 2019).

benefits.⁸ To deliver on these promises, however, these technologies must be capable of operating safely.

While navigation technologies that rely on above-ground data can help these vehicles operate safely, this above-ground data cannot be relied upon exclusively. Bad weather such as snow or fog can create poor visibility to landmarks used by above-ground navigation technologies. Open roads with few or no surface features can likewise make it difficult to determine precise location using above-ground landmarks. Lane markers may be faded, confusing (*e.g.*, at complex intersections), or completely absent. Additionally, these surface-level conditions can change over time, further complicating vehicles' ability to navigate successfully. Therefore, navigational tools' exclusive reliance on above-ground data makes driver-assist vehicles less safe for everyone. Technologies like GSSI's address these weaknesses and consistently keep vehicles—and their drivers and passengers—safely in their lanes.

In addition to the tremendous public interest benefits that promise to stem from the eventual adoption and successful deployment of this technology, grant of the GSSI Waiver Request would not undermine the purpose of the Commission's UWB GPR rules. The goal of these rules is to "ensure that UWB GPR devices do not cause harmful interference to authorized radio services, including Federal services."⁹ Despite the GPS Innovation Alliance's ("GPSIA's") assertions to the contrary,¹⁰ the GSSI Waiver Request makes clear that there is minimal risk of harmful interference to incumbent operations in co-frequency and adjacent bands. The GSSI GPR device: (1) otherwise complies with the Commission's rules, (2) will operate near the ground, and (3) will radiate energy directly into the ground. No other party

⁸ GSSI Waiver Request at 7-8.

⁹ *Proceq USA Inc. Request for Waiver of Part 15 of the Commission's Rules Applicable to Ultra-Wideband Devices*, Order, 33 FCC Rcd 2258, ¶ 2 (2018) ("*Proceq Waiver Order*").

¹⁰ Comments of the GPS Innovation Alliance, ET Docket No. 19-155, at 3-4 (filed June 19, 2019) ("GPSIA Comments").

opposes the request or raises concerns with the scope of the information provided by GSSI.¹¹

Accordingly, the purpose of the Commission's Part 15 rules would not be undermined by grant of the GSSI Waiver Request and OET should grant the request.

II. THE IMPOSITION OF NEW REQUIREMENTS ON UWB WAIVER PETITIONS IS OUTSIDE THE SCOPE OF THIS PROCEEDING.

The GPSIA Comments include a number of proposals that go well beyond the scope of the OET's inquiry with respect to the GSSI Waiver Request. Specifically, GPSIA requests that the Commission: (1) subject all UWB waiver requests and requests for waiver modification to public notice and comment;¹² and (2) require that all UWB waiver requests include "certain minimum technical information . . . in order to assess UWB/Global Navigation Satellite System ("GNSS") compatibility."¹³ GPSIA asks that the Commission not process waiver requests that do not include GPSIA's proposed minimum technical information "unless and until the requesting party submits such information."¹⁴

The requirements for seeking and obtaining a waiver of the Commission's rules are well settled.¹⁵ Nothing in the Commission's waiver rules—which are final and cannot be revisited in

¹¹ Indeed, no other party filed initial comments in response to the GSSI Waiver Request.

¹² GPSIA Comments at 3, 6-7.

¹³ *Id.* at 3.

¹⁴ *Id.* at 3, 7-8.

¹⁵ See, e.g., *32 Techs. LLC Request for Waiver of Part 15 of the Commission's Rules Applicable to Wideband Systems*, Order, 33 FCC Rcd 11662, ¶ 4 (2018); *Proceq Waiver Order* at ¶ 4; *Headsight, Inc. Request for Waiver of Part 15 of the Commission's Rules Applicable to Ultra-Wide Band Devices*, Order, 32 FCC Rcd 1511, ¶ 7 (2017). As discussed above, the Commission may grant a waiver if the petitioner demonstrates good cause for such action. 47 C.F.R. § 1.3. See also *ICO Global Communications*, 428 F.3d at 269; *Northeast Cellular*, 897 F.2d at 1166; *WAIT Radio*, 418 F.2d at 1157. "Good cause" may be found and a waiver granted "where particular facts would make strict compliance inconsistent with public interest. *Northeast Cellular*, 897 F.2d at 1166; *ICO Global Communications*, 428 F.3d at 269; see also *WAIT Radio*, 418 F.2d at 1157-59. A waiver is consistent with the public interest when it does not undermine the purpose of the rule, and there is a stronger public interest benefit in granting the waiver than in applying the rule. See, e.g., *WAIT Radio*, 418 F.2d at 1157; *Northeast Cellular*, 897 F.2d at 1166.

the context of this waiver request proceeding¹⁶—requires UWB waiver requests to be subject to a public notice and comment process.¹⁷ In addition, adopting any new substantive UWB waiver requirements (such as requiring certain technical information) in the context of this proceeding would raise concerns under the Administrative Procedure Act, which requires agencies to provide notice, and interested parties with the opportunity to comment, on proposed regulations.¹⁸

At this time, WaveSense takes no position on whether subjecting every UWB waiver request to a notice and comment process would be in the public interest. But the GSSI Waiver Request is not the appropriate proceeding for evaluating this request.¹⁹

III. GPSIA’S REQUESTED TECHNICAL PARAMETERS WILL NOT ASSIST STAFF REVIEW OF GSSI’S OR OTHER UWB WAIVER REQUESTS.

As a general matter, the imposition of new, rigid technical requirements on future UWB waiver petitioners will undermine the inherent flexibility of the Commission’s waiver process.

¹⁶ 47 U.S.C. §§ 402(c), 405(a); 47 C.F.R. § 1.429. The Commission has repeatedly held that “‘indirect challenges to decisions that were adopted in proceedings in which the right to review has expired are considered impermissible collateral attacks and are properly denied.’” *See, e.g., Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions et al.*, Order, 31 FCC Rcd 905, ¶ 9 n.32 (WTB 2016) (quoting *Amendment of Section 73.22 et al.*, Memorandum Opinion and Order on Further Reconsideration, 29 FCC Rcd 4769, ¶ 9 (MB 2014)); *Motions for Declaratory Rulings Regarding Communication Rules & Policies for Frequency Coordination in the Private Land Mobile Radio Services*, Memorandum Opinion and Order, 14 FCC Rcd 12752 (1999).

¹⁷ *See* 47 C.F.R. §§ 1.3, 15.1 *et seq.* *Cf., e.g., Proceq Waiver Order* at ¶ 1 (granting Proceq’s request for a waiver of the Commission’s rules governing unlicensed UWB devices to permit the certification and marketing of its GPR device without requesting public comment).

¹⁸ *See* 5 U.S.C. § 553 (mandating that federal agencies generally adopt substantive rules only after providing interested parties with notice and an opportunity to comment).

¹⁹ *See* 47 C.F.R. § 1.401 (providing that any interested person may petition for the issuance, amendment or repeal of a rule or regulation). *Cf.* Letter from Peter H. Doyle, Chief, Audio Division, Media Bureau, FCC, to Ernest T. Sanchez, Esq., 29 FCC Rcd 5180 (2014). To the extent that the Commission would construe such requirements as non-legislative in nature, the appropriate vehicle for GPSIA’s request would be a petition for declaratory ruling pursuant to section 1.2 of the Commission’s rules. 47 C.F.R. § 1.2.

More specifically, GPSIA's proposed technical parameters are not necessary for evaluating GSSI's specific waiver.

First, GPSIA requests that the Commission require "[o]ut of [b]and [e]mission power up to 2 GHz in frequency (particularly spurious emissions and harmonics)" from all UWB rule waiver petitioners.²⁰ While waiver petitioners should be willing to address interference concerns raised by interested parties in the course of comments, this proposal is not limited to the specific frequencies that may adversely affect GNSS reception and is not necessary for the Commission to consider the merits of a waiver request. Indeed, the Commission's Part 15 rules already establish emissions limits in consideration of GPS operations,²¹ and the GSSI Waiver Request affirmed that the GPR device complies with those limits.²² Unduly burdening GSSI (and other petitioners) with excessive technical requirements will not serve the public interest.

Second, submission of the antenna pattern in these circumstances is not necessary for evaluating the risk of interference to co-frequency and adjacent channel operations. For ground penetration radar systems, the operational orientation is known, and so the effective isotropic radiated power is pointed with high gain directly towards the ground. Providing the antenna pattern would be superfluous. Furthermore, this information may be competitively sensitive and potentially require the Commission to evaluate confidential treatment concerns.

Finally, safe operation of autonomous vehicles will require an array of sensing and communications technologies. For companies seeking to develop innovative GPR technologies for autonomous driving, there is a strong economic incentive to ensure that such devices do not

²⁰ GPSIA Comments at 7.

²¹ See 47 C.F.R. § 15.509(d); *Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, Memorandum Opinion and Order, 18 FCC Rcd 3857, ¶ 12 ("The emission limits established for UWB operation in the 960-1610 MHz band were based on conservative models requested by NTIA, the Department of Defense, the US GPS Industry Council and others. These models were based on a 1 dB increase in the noise floor of the GPS receiver with the GPS receiver and the UWB device separated by conservative distances.").

²² GSSI Waiver Request at 7.

interfere with a vehicle's navigation systems, including GPS. Anything else would be counterproductive. Accordingly, the designers of these GPR technologies have a strong incentive to comply with the Commission's rules to the fullest extent possible.²³

IV. CONCLUSION

Grant of the GSSI Waiver Request would further the public's interest by helping realize the benefits of autonomous vehicles without creating interference to existing services. GPSIA's proposals to impose heightened requirements on UWB waiver petitions are outside the scope of this proceeding, which is strictly limited to the merits of the GSSI Waiver Request. Moreover, GPSIA's proposals would constrain the inherent flexibility of the Commission's waiver process and would not assist staff review of GSSI's specific request or UWB waiver requests generally. Accordingly, WaveSense asks OET to disregard GPSIA's proposals and urges OET to grant the GSSI Waiver Request without delay.

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Respectfully submitted,

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²³ See *id.* ("The device will comply with all applicable Commission rules not addressed here, including Section 15.509 emissions limits.").